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Chapter 1

Introductory Chapter: Antibiotic Use in Animals Today

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1. Introduction

Use of antibiotics in everyday life has become an issue of different opinions and debates during the past couple of years. Due to the appearance of several occurrences, and as a consequence, of antibiotic usage, it became a topic of different studies. In the book "Antibiotic Use in Animals," we have tried to show and explain the different aspects of antibiotic use, different points of view, and a multidisciplinary and transdisciplinary approach to this topic.

According to Wikipedia—"antibiotic use in livestock is the use of antibiotics for any purpose in the husbandry of livestock, which includes treatment when ill (therapeutic), treatment of a batch of animals when at least one is diagnosed as ill (metaphylaxis, similar to the way bacterial meningitis is treated in children), and preventative treatment (prophylaxis) against disease" [1].

In the past, antibiotics were used as additions in animal feed and/or water for better growth of the animals or for higher feed efficiency. They were added in subtherapeutic doses. This opinion was eliminated in 2017, as a result of new FDA Veterinary Feed Directive. This practice has been banned in Europe since 2006 by the European Commission (Ban on antibiotics as growth promoters in animal feed).

In usage of antibiotics in animals, it is not only important to show the necessity of utilization, but also responsibility and moderation while handling antibiotics. There is no doubt that antibiotics have to be used in different cases of disease in animals. But during the past decades, antibiotics have been used sometimes irresponsibly and sometimes even abused. Some antibiotics "stopped working," so pharmaceutical industries had to search for new generations of antibiotics, which were again overused in practice—new antibiotics, over usage again, and after several decades, we have found ourselves in a closed circle with no way out, and then, a new term has appeared called—antimicrobial resistance. After a number of years of use of antibiotics, antimicrobial resistance has occurred and the way of handling and use of antibiotics had to change.

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The topic of Antibiotic Use in Animals is of scientific nature, but it is also meant to bring the topic of antibiotic use to wider reading audience. The problem of antibiotic resistance and antibiotic overuse cannot be solved or tackled by a single book. The purpose of this book is to at least cut into the topic of antibiotic use in animals and antimicrobial resistance.

The significance of this topic is not in question, since there is a whole public debate going on for a while about the use of antibiotics in animals as well as in humans. There are reviews on antibiotic use through the history, like the one on Antibiotic Use in Food Animals: Perspective, Policy, and Potential, published in Public Health Reports [2]—where it is stated that "antibiotic use today plays a major role in the emerging public health crisis of antibiotic resistance." Massive antibiotic use in agriculture, leads to a topic of how antibiotic use in farm animals contributes to the overall problem of antibiotic resistance in humans and in animals. The mentioned review summarizes literature on the role of antibiotics in the development of resistance and its risk to human health with the search of multiple databases to identify major lines of argument supporting the role of agricultural antibiotic use in the development of resistance and to summarize existing regulatory and policy documents.

Antibiotic resistance became a public health crisis, and whole research teams are dedicated identifying the resistant strains and ways how to overcome the current situation with hospital acquired infections. Antibiotic resistance is a product of natural selection in bacteria, their survival abilities. Individual bacteria carry mutations that can lead to ineffectiveness of antibiotics.

The Federation of Companion Animal Veterinary Associations (FECAVA) is also interested in solving the problem about the antibiotic use and they have dedicated a meeting to European Antibiotic Awareness Day, which has been going on for the 10th time. FECAVA is also dedicated to fight antimicrobial resistance and to raise awareness of the public on responsible use of antibiotics. This organization has issued a chart named as "Advice on responsible use of antibiotics," which gives a detailed instruction how to handle the use of antibiotics and to support decision making and also the diseases and conditions when antibiotic use is recommended [3, 4].

Antibiotics are irreplaceable in some cases of illness, but not all. Some infectious diseases are caused by bacteria, but some are caused by viruses or other causative agents that do not respond to antibiotic therapy. Not even all bacterial infections demand antibiotic therapy. FECAVA appeals also to the animal owners, not only practitioners, that inappropriate use of antibiotics can even harm the animal and that the responsibility has to be globalized as responsibility of society!

There is no doubt that antibiotics are important, and that many infections, in animals or humans, cannot be treated with anything else. But with antimicrobial resistance raise, the treatment of these diseases may become a problem. Medical doctors and veterinarians have to work together on this issue, including the International Health Institutions. The diagnostic procedure in establishing the cause of the disease is essential. After identification of the cause of the disease, a decision can be made if the antibiotics are necessary. If antibiotic therapy is the solution to illness, the advice of medics/veterinarians has to be followed. If antibiotic treatment is to be applied, there are several rules that have to be followed during the treatment…the dosage of the antibiotic given per one intake cannot be changed at free will of the animal owner

or the patients themselves. Therapy must not be stopped earlier or prolonged at free will. The treatment of one animal cannot be shared with other animals in the same house holding or farm, at free will of the owner. just because they have similar symptoms to the owners eye. The left over medicaments should never be reused, they have to be safely disposed. The use of antibiotics with the aim of infection control has to be responsible on the intention of a medic/vet, and not on the intention of the patient/owner. Usage of antibiotics as a precaution is also not appropriate. Antibiotics should be used responsibly, only when necessary and only when there is no other choice.

The usage of antibiotics can be such in variety of cases and when used responsibly, it can only contribute to Public Health. In this book that variety is shown! The intention is for a wide audience to comprehend the subject—experts such as medical doctors and veterinarians, but also pet and animal owners and even wide population of potential patients which is almost everybody. The story of antibiotic use has to be presented as a positive one but in responsible hands and not as a villain.

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